

Reducing Speed Limits to Support Lower Skid Resistance Investigatory Levels

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An analysis framework is presented for rationally arriving at economically justifiable operating speed reductions to compensate for the inability to achieve recommended levels of skid resistance on high risk curves. The framework has been based on vehicle speed related procedures incorporated in the New Zealand Transport Agency's Economic Evaluation Manual, which include travel time, vehicle operating costs, carbon dioxide emissions and crash severity. New Zealand specific research related to relationships between skid resistance level of the road surface and curve crash risk and expected service life of the road surface were also employed in the framework.

The open speed section of state highway 58 was selected to trial the analysis framework. The trial showed that if the skid resistance on the high risk curves could be maintained only to a level of 0.4 ESC, a 10km/h reduction in maximum operating speed from 100km/h to 90 km/h was sufficient to achieve the same level of crash risk as if the curve skid resistance levels were maintained at the recommended investigatory levels. The overall benefit of reducing the open road speed limit by 10 km/h amounted to an annual cost saving of about NZ\$400,000 indicating that for state highway 58 this is a very cost effective safety measure. Furthermore, the annual costs are dominated by speed change cycle and travel time considerations.